

REMARKS

Claims 1-13 and 15-30 are pending in this application. By this Amendment, the specification and claims 2, 5-8 and 23 are amended and new claims 29-30 are added. Various amendments are made to the claims for clarity and are unrelated to issues of patentability.

The Office Action suggests corrections to claim 23. The above amendment to claim 23 incorporates the suggestions in the Office Action.

Applicant gratefully acknowledges the Office Action's indication that claims 4-6, 25 and 28 contain allowable subject matter.

The Office Action rejects claims 1-3, 7-12, 15, 16, 26 and 37 under 35 U.S.C. §103(a) over U.S. Patent 5,880,863 to Rideout et al. (hereafter Rideout) in view of Fig. 1 of the present application (hereafter AAPA) and further in view of U.S. Patent 6,498,664 to Morita (hereafter Morita). The Office Action also rejects claims 13 and 17-25 under 35 U.S.C. §103(a) over Rideout, Morita and further in view of U.S. Patent 6,507,741 to Bassirat (hereafter Bassirat). The rejections are respectfully traversed.

The Office Action appears to assert that Fig. 1 is prior art. The Office Action has applied Fig. 1 as a prior art reference without providing any reason as to how/why Fig. 1 is prior art. Applicant respectfully requests that the Patent Office provide applicant details as to how and why Fig. 1 is considered prior art.

Independent claim 1 recites a plurality of optical repeaters coupled in series, each configured to receive and convert a corresponding different radio frequency (RF) analog signal to a first baseband digital electrical signal, sum the first baseband digital electrical signal and a

second baseband digital electrical signal transmitted from a previous optical repeater in the series to generate an optical output signal. Independent claim 1 also recites a base station configured to receive and demodulate the optical output signal of a last one of the plurality of optical repeaters in the series.

The Office Action asserts that Rideout discloses a plurality of optical receivers coupled in series and each configured to receive a corresponding different radio frequency analog signal. The Office Action also asserts that Rideout discloses summing the first RF analog signal and the second RF analog signal transmitted from a previous optical repeater. The Office Action agrees that Rideout does not disclose converting a RF analog signal to a baseband digital electrical signal and a digital summer for summing the baseband digital electrical signals. The Office Action then relies on AAPA Fig. 1 and Morita in order to show these missing features. However, the Office Action clearly relies on impermissible hindsight as a suggestion for the modifications. More specifically, there is no suggestion in any of the applied references for an optical repeater that converts a radio frequency (RF) signal to a first baseband digital electrical signal and an optical repeater that sums a first baseband digital electrical signal and a second baseband digital electrical signal (transmitted from a previous optical repeater). Rather, the only suggestion for these features are provided in applicant's own specification.

The Office Action asserts that Rideout's combiner 116 sums a first RF analog signal and a second RF analog signal. However, the other applied references do not teach or suggest an optical repeater to convert an RF analog signal to the first baseband digital signal as alleged in the Office Action. That is, the Office Action appears to rely on AAPA Fig. 1 as showing a

frequency converter 350 that converts an RF analog signal to a baseband digital electrical signal. However, the frequency converter 350 is provided within the CDMA master base station 300 and not within an optical repeater. In other words, AAPA Fig. 1 does not disclose an optical repeater to convert a first RF analog signal to a first baseband digital electrical signal as recited in independent claim 1. There is no suggestion for providing the frequency converter 350 of AAPA within Rideout as alleged in the Office Action.

The Office Action asserts that one of ordinary skill in the art would have been motivated to make the modification using Fig. 1's frequency converter 350 since Fig. 1 suggests converting RF analog signal to a baseband digital electrical signal and a digital summer for summing baseband digital electrical signals having an advantage of allowing converting an analog signal to a digital signal and providing an optical communication signal with a high speed and high capacity. However, this is not proper motivation for the claimed features. Rather, the Office Action clearly relies on impermissible hindsight in order to suggest providing a frequency converter into an optical repeater (based on a frequency converter 350 within a CDMA BS). The alleged motivation is without any basis in the prior art. Thus, the rejection is improper at least for this reason.

Furthermore, independent claim 1 recites that the optical repeater sums the first baseband digital electrical signal and the second baseband digital electrical signal transmitted from a previous optical repeater. As stated above, the Office Action states that Rideout does not teach summing the baseband digital electrical signals. Rather, the Office Action indicates that Rideout discloses summing RF analog signals. Applicant submits that there is no suggestion

in the applied references for an optical repeater to sum a first baseband digital electrical signal and a second baseband electrical signal. The Office Action cites Morita's multiplexer 66 (Fig. 5) as showing summing of baseband digital electrical signals. However, there is no suggestion for how this feature may be applied within Rideout in order to reach the claimed features. Applicant respectfully submits that the Office Action has relied upon impermissible hindsight in order to provide these alleged features within Rideout. Further, there is no suggestion that these features, even if combined, may result in a working apparatus. Again, the Office Action states that one of ordinary skill in the art would have been motivated to do this because having the advantage of allowing converting an analog signal to a digital signal and providing an optical communication signal with high speed and high capacity. Applicant respectfully submits that the Office Action does not provide proper motivation to provide a summer (to sum baseband electrical signals) into Rideout's apparatus.

For at least the reasons set forth above, applicant respectfully submits that the Office Action fails to make a *prima facia* case of obviousness with respect to the claimed features. Accordingly, independent claim 1 defines patentable subject matter.

Independent claim 10 also defines patentable subject matter for at least similar reasons. For example, independent claim 10 recites receiving and converting a first radio frequency (RF) analog signal to a first baseband digital signal in a first repeater, and receiving and converting a second RF analog signal to a second baseband digital signal in a second repeater connected in series with the first repeater. Independent claim 10 also recites summing the first baseband digital signal with the second baseband digital signal received from the second repeater, and

converting an output of the summed signal to an optical output signal. For at least similar reasons as set forth above, the applied references do not teach or suggest these features. Thus, independent claim 10 defines patentable subject matter.

Independent claim 17 also defines patentable subject matter for at least similar reasons. For example, independent claim 17 recites converting the amplified RF analog signal to a first baseband digital signal and delaying the first baseband digital signal. Independent claim 17 also recites summing the delayed first baseband digital signal and a second baseband digital signal received from a second optical repeater to generate an electrical output signal, the second baseband digital signal corresponding to a converted second RF analog signal received by the second optical repeater, and converting the electrical output signal. For at least similar reasons as set forth above, the applied references (including Bassirat) do not teach or suggest these features. There also is no motivation to provide the features of Bassirat within Rideout as alleged in the Office Action so as to reach the features of independent claim 17. Thus, independent claim 17 defines patentable subject matter.

Independent claim 23 also defines patentable subject matter for at least similar reasons. For example, independent claim 23 recites a second optical repeater coupled to the first optical repeater and configured to receive a second RF analog signal, convert the second RF analog signal to a first baseband digital electrical signal, delay the first baseband digital electrical signal, convert the first baseband digital optical signal to a second baseband digital electrical signal, sum the delayed first baseband digital electrical signal and the second baseband digital electrical signal, and convert the summed signal to an output baseband digital optical signal. For at least similar

reasons as set forth above, the applied references do not teach or suggest these features. Thus, independent claim 23 defines patentable subject matter.

Independent claim 26 also defines patentable subject matter for at least similar reasons. For example, independent claim 26 recites a second optical repeater coupled to receive the first optical signal from the first optical repeater and configured to receive and convert a second RF signal to a second baseband digital electrical signal, convert the first optical signal to an input electrical signal, add the second baseband digital electrical signal to the input electrical signal to generate a summed electrical digital signal, and convert the summed electrical digital signal to a second optical signal. For at least similar reasons as set forth above, the applied references do not teach or suggest these features. Thus, independent claim 26 defines patentable subject matter.

Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this reason. In addition, the dependent claims recite features that further and independently distinguish over the applied references.

For example, dependent claim 29 recites an Optical signal converter (O/E converter) to convert a baseband digital optical signal received from the previous optical repeater to the second baseband digital electrical signal, a digital summer to sum the first baseband digital electrical signal and the second baseband digital electrical signal, and an Electrical signal to Optical signal digital converter (E/O converter) to convert a summed signal outputted from the digital summer to the optical output signal. Applicant respectfully submits that Rideout and the other applied references do not teach or suggest these features. That is, Rideout does not

disclose the O/E converter, the digital summer and the E/O converter. Additionally, dependent claim 30 recites a delay device to delay the first baseband digital electrical signal prior to the optical repeater summing the first baseband digital electrical signal and the second baseband digital electrical signal. The applied references do not teach or suggest these features. Thus, dependent claims 29-30 define patentable subject matter at least for these additional reasons.

CONCLUSION

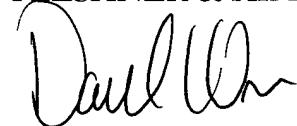
In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-13 and 15-28 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **David C. Oren**, at the telephone number listed below.

Serial No. 10/029,261
Reply to Office Action of July 26, 2005

Docket No. P-0312

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
FLESHNER & KIM, LLP



David C. Oren
Registration No. 38,694

P.O. Box 221200
Chantilly, Virginia 20153-1200

(703) 766-3701 DYK:DCO/knv/kah

Date: October 26, 2005

Please direct all correspondence to Customer Number 34610